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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/699,705

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Katsuji Hattori

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09/20/2004

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EXAMINER

SCHECHTER, ANDREW M

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 09/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/699,705	Applicant(s) HATTORI ET AL.	
	Examiner Andrew Schechter	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 39-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 39-47 is/are rejected.
- 7) ☒ Claim(s) 48 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/786,160.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/5/04, 11/4/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it describes a non-elected invention rather than the invention of the present claims. Correction is required. See MPEP § 608.01(b).

Claim Objections

2. Claim 47 is objected to because of the following informalities: "reflective" should be "refractive". Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 45 and 46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 45 and 46 recite "an aperture portion". An aperture is an opening or through-hole, as shown in Figs. 27 and 35, for instance. The claim appears to refer to the device of Fig. 37, where the display electrode is provided with a recess [384a] on top of a contact hole [383]. There are two possibilities: 1) "aperture" in claim 45 and 46 is meant to be "recess" and refers to the recess [384a], or 2) "aperture" in claim 45 and

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46 refers to the contact hole. If the former were correct, then claim 46 should read "the recess portion is on a conducting via hole" rather than "the aperture portion is a conducting via hole". For examining purposes, the latter is assumed to be the intended meaning.

5. Claims 41-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 41 and 43 recite "the electric field". What electric field? The term lacks antecedent. Does the applicant mean "the electric field caused by the application of said voltage"? For examining purposes, this is not assumed.

6. Claim 40 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 40 recites "the liquid crystal layer thickness is small". Does the applicant intend "smaller than inside the display pixel regions"? For examining purposes, this is not assumed.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 39-43, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Wakemoto et al.*, Japanese Patent Document No. 10-020284 (provided by the applicant; the examiner attaches a machine-translation) in view of *Mazaki et al.*, U.S. Patent No. 5,883,685.

Wakemoto discloses a liquid crystal display device comprising a pair of substrates [1, 20], liquid crystal [14] subjected to parallel alignment; wherein, with no voltage the liquid crystal is in splay alignment, with pretilt angles at upper and lower boundaries having opposite signs; wherein, before driving, an initialization is performed to transition from splay to bend alignment by application of a voltage; wherein driving is performed in the bend alignment; comprising [see Fig. 4, for instance] at least one region [32] in the display pixels where the liquid crystal layer thickness is smaller than around it, and the strength of an electric field applied to the liquid crystal layer in this region is larger than the strength of an electric field applied to the liquid crystal layer around it [paragraph 0035, for instance].

Wakemoto does not appear to disclose the remaining limitation of claim 39, that there is a phase compensator arranged on an outer side of the substrates. *Mazaki* does disclose [see abstract] an analogous OCB LCD device with a phase compensator arranged on an outer side of the substrates. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the phase compensator of *Mazaki* in the device of *Wakemoto*, motivated by *Mazaki*'s teaching that it is "capable of effecting not only color compensation by also the expansion of a viewing angle so far not attained" [col. 2, lines 39-45]. Claim 39 is therefore unpatentable.

Mazaki's phase compensator includes a phase compensator made of an optical material with negative refractive index anisotropy whose main axes are in hybrid arrangement [col. 3, lines 32-62], so claim 47 is also unpatentable.

Wakemoto discloses at least one location [32] in the display pixels where the electric field concentrates, so claim 41 is also unpatentable. The location is at a portion of the display electrode that partially protrudes in the thickness direction of the liquid crystal layer [the protrusion 32 is made of aluminum, in direct electrical contact with the ITO pixel electrode 2, so both are considered part of the display electrode], so claim 42 is also unpatentable.

Considering claim 40, *Wakemoto* discloses a region [above the gate lines] where the liquid crystal layer thickness is small [though not smaller than inside the display pixel regions], and in the case when the gate line is on but the voltage on the data line is zero, the strength of the electric field (non-zero) applied to the liquid crystal in this region is larger than the strength of the electric field (zero) applied to the liquid crystal in the pixels. Claim 40 is therefore unpatentable. In this situation, the electric field concentrates at this location outside the display pixels, so claim 43 is also unpatentable.

9. Claims 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Wakemoto* in view of *Mazaki* as applied to claims 39-43 and 47 above, and further in view of *den Boer et al.*, U.S. Patent No. 5,641,974.

Wakemoto does not disclose the additional limitation of claim 45 that a portion of either the display or common electrode (or both) is provided with an aperture portion [see discussion of "aperture portion" under 35 U.S.C. 112 above]. *Den Boer* discloses

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[see Fig. 4, for instance] a display electrode provided with an aperture portion [the contact hole between the pixel electrode and the TFT]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use this structure (flattening film [33] with contact hole) in the device of *Wakemoto*, motivated by having an increased aperture ratio (hence higher quality display) because the pixel electrodes can be formed to overlap the address lines via an insulating film [33], with electrical contact via the contact hole. Claim 45 is therefore unpatentable.

The LCD described above is a active matrix LCD with switching elements [TFTs] and the aperture portion in *den Boer* is a conducting via hole electrically connecting pixel electrodes formed on a flattening film and the switching elements, so claim 46 is also unpatentable.

Allowable Subject Matter

10. Claim 48 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Claim 44 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not disclose the device of claim 44, in particular the additional limitation that the location where the electric field concentrates is a portion of an electrode that partially protrudes in the thickness direction of the liquid crystal layer. Claim 44 would therefore be allowable if rewritten appropriately.

The prior art does not disclose the device of claim 48, in particular the additional limitation that the phase compensator includes at least one positive phase compensator. Claim 48 would therefore be allowable if rewritten appropriately.

The prior art does not disclose an LCD with a voltage-driven splay-bend initialization transition as recited in claims 43 and 44, with the additional limitation that the electric field caused by the application of said voltage concentrates in at least one location outside the display pixels. Claims 43 and 44 would therefore be allowable if the claims were amended as suggested above under 35 U.S.C. 112.

Similarly, the prior art does not disclose an LCD with a voltage-driven splay-bend initialization transition as recited in claim 40, with the additional limitations that there is at least one region outside the display pixels where the liquid crystal layer thickness is smaller than inside the display pixels, and that an electric field caused by the application of said voltage, applied to the liquid crystal layer, is larger in this region than in the pixels. Claim 40 would therefore be allowable if the claims were amended as suggested here.

Election/Restrictions


13. Applicant's election without traverse of Group II, claims 39-48, in the reply filed on 28 June 2004 is acknowledged.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Andrew Schechter
Patent Examiner
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9 September 2004